ADDITIONS AND EMENDATIONS TO THE REFERENCE LIST OF THE LAND AND FRESH-WATER MOLLUSCA OF NEW ZEALAND.

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(Communicated by C. Hedley, F.L.S.)

(Plates xxii.-xxiii.)

In the above-mentioned list a number of new species were enumerated, the descriptions of which were promised for the next volume of the Proceedings. These are given herewith, accompanied by figures of the shells, and, where it was possible, of the dentition also. There were a few of our shells whose identification seemed to me more or less doubtful, and these I forwarded to the respective museums where the type specimens are preserved, and the gentlemen in charge most obligingly undertook the verification of the specimens, for which kindness my best thanks are due to them. I now wish to place all the reports on record, as they are no doubt of the greatest importance.

Lagochilus Hedleyi, n.sp.

(Pl. xxii. figs. 1-1*d*.)

Shell small, turbinate, perforated, rufous or pale horny, not shining, rather thin, with radiate white membranaceous plaits, which are close together on the penultimate whorl, but are gradually becoming more distant on approaching the aperture, where there are about 9 plaits per millm. Between the plaits the epidermis is faintly spirally striated, crossed by a few growth-lines; the spiral striæ are very close and can only be seen with a good magnifying glass. Spire conical, nearly as high as broad; apex subacute, smooth. Whorls 5, rounded, the first four slowly, the last rapidly increasing. Suture deep; periphery rounded,

The notch at the suture is very slight. Aperture nearly circular, diagonal; peristome simple, straight, slightly callous inside, the margins approximating and united by a thin callus. Umbilicus previous, very narrow, deep, open.

Operculum horny, slightly concave, a few whorls only, nucleus central.

Diam., greatest 2, least $1\frac{3}{4}$; height $2\frac{1}{4}$ millm.

Animal unknown.

Hab.—North Island: Hillyer's Creek, near Auckland (C. Musson), Hunna Range (Capt. T. Broun), Pirongia Mt. (A. T. Urquhart).

I have much pleasure in uniting the name of my friend Mr. C. Hedley with this species. The two specimens collected by Mr. C. Musson I first took for *L. cytora*, Gray, as they were very much worn and had all the membranaceous plaits rubbed off. In January of last year Capt. T. Broun kindly sent me a number of shells collected by him on the Hunna Range, and amongst them I found two specimens of this new species in good condition.

This species is very near *L. cytora*, Gray, but may be distinguished from it by the membranaceous plaits and the absence of well developed distant spiral striations and epidermal hairs.

Lagochilus torquillum, n.sp.

(Pl. xxii. figs. 2-2*b*.)

Shell very minute, conical, subperforated, rufous, not shining, very thin and fragile, semi-transparent, with close white membranaceous and oblique radiate plaits, directed slightly backwards; about 15 per millm. on the last whorl. The interstices between the plaits are minutely granulated, the granules sometimes grouped in close spiral striæ on the last whorl. Spire acutely conical, apex rather sharp, smooth. Whorls 5, the last occupying nearly one-half of the height; strongly convex. Suture deep. Aperture diagonal, circular. Peristome simple, straight, the margins not meeting, but united by a thin callus. In this species it can hardly be spoken of a notch in the peristome at the point where

the upper margin meets the whorl. Base rounded, the membranaceous plaits extending to the umbilical region, which is slightly deepened. Umbilicus covered.

Operculum lost in all the specimens I have seen.

Diam. $1\frac{1}{4}$; height $1\frac{3}{4}$ millm.

Hab.—North Island: Howick and Hunua Range (Capt. T. Broun).

This species, like all the others of the genus, seems to be very rare, but is, from its minuteness and dark colour, easily overlooked.

Gundlachia sp.

In the "Reference List," p. 624, No. 24, it is mentioned that specimens of *Ancylus tasmanicus*, Tenison-Woods, were discovered by me in New Zealand. I wish to point out that I never identified the *Ancylus* I found in the River Avon as *A. tasmanicus*, but as *A. Woodsi*, Johnston (*vide* Journ. de Conch. Vol. xxxii. p. 250). My friend Mr. C. Hedley substituted the former name as a synonym for the latter; but this, I think, is a mistake. There can be no doubt whatever that the Tasmanian *Ancylus Woodsi*, Johnst., is the young form of *Gundlachia Petterdi*, Johnst. Johnston himself says in his description of *A. Woodsi* (Proc. Roy. Soc. Tasm. 1878, p. 25): "Animal and teeth almost similar to *Gundlachia Petterdi*." And in the description of the latter shell (l.c. p. 23) he writes: "In the young state the shell is simple and resembles the common *Ancylus*." This explains why Johnston in his List of Tasmanian Mollusca (1890) does not mention his *A. Woodsi*, but unfortunately he also omits to say that it is synonymous with *Gundlachia*. *A. Woodsi* and *Gundlachia* are found in the same localities, a fact which was stated to me by Messrs. Beddome and May. I think that *Ancylus australicus*, Tate, and perhaps *A. Smithi*, Cox, may also be young forms of *Gundlachia*, and it is therefore desirable that their dentition should be examined. I have not seen *Ancylus assimilis*, Pett., and *oblonga*, Pett., but *A. tasmanicus*, Tenison-Woods, I take to be a true *Ancylus*, and not a young *Gundlachia*.

Some time ago I found a great number of the so-called *Anclyus Woodsi*, Johnst., in the River Avon, and this time alive. On examining the radula and comparing it with that of a *Gundlachia* from Ohio, U.S.A., I found that our mollusc is also a *Gundlachia*. This was fully confirmed by finding a number of shells in which the *septum* had begun to form or was already completely formed, and I hope to find full-grown *Gundlachia* later on. Prof. F. W. Hutton suggested to me that this *Gundlachia* might have been introduced from Tasmania on aquatic plants used for packing trout ova. This question can of course only be settled definitely when *Gundlachia* is found in other localities, where the introduction is out of question. There is, however, one reason which leads me to think that this *Gundlachia* is really a New Zealand mollusc. I found the shells up to the present time only at the end of the outflow of Horse-Shoe Lake in the River Avon, and from this place *further down* for about a mile on the same bank of the river. I have not found *Gundlachia* from the outflow of the lake *upwards* to the fish-hatching establishment, which is distant several miles. This makes it very probable that the original habitat of our shell is the Horse-Shoe Lake, and that it was brought down to the river when the canal from the lake was cleared from aquatic plants *(Anacharis)*. The lake is very difficult of access, and that is why I have not explored it yet. It seems to me that *Gundlachia* wants for its full development a still water, and that in the river the animals, at least most of them, continue living in an *Ancylus*-shell and dying without ever having made an attempt to build the peculiar shell of *Gundlachia*. Therefore we find here as well as in Tasmania rather large ancyliform shells of this *Gundlachia*, whilst the shells with a septum are of much smaller size. In Tasmania *A. Woodsi* is said to be plentiful and *Gundlachia* very rare in the same locality.

Paryphanta Meesoni, Suter, sp.

No. 52 of the Reference List. It is not so very long ago that I ascertained the fact that this species lays calcareous eggs and can therefore not belong to the genus *Rhytida*, where I first

placed it, as this genus is said to be viviparous. In the exterior of the animals of *Paryphanta* and *Rhytida* there is hardly any difference, and the shell characters of *P. Meesoni*, the smallest known of the genus, are as well with *Rhytida* as with *Paryphanta*. It is remarkable for the absence of a thick epidermis involving the peristome.

THALASSOHELIX ZICZAC, Gould, sp.

I am glad to say that I was perfectly right in admitting *T. ziczac*, Gould, and *T. portia*, Gray, to be one and the same species. I sent a specimen to Dr. W. H. Dall in Washington to have it compared with Gould's *ziczac* and he kindly wrote to me that there is no doubt whatever of the identity of my specimen with *Helix ziczac*, Gould. A similar specimen was sent to Mr. E. A. Smith of the British Museum and this gentleman most obligingly informed me that it perfectly corresponds with Gray's *Helix portia*.

THALASSOHELIX ZELANDIÆ, Gray, sp.

A specimen of this shell from Auckland was also forwarded to the British Museum for comparison with Gray's type. I am indebted to Mr. E. A. Smith for the following report: "The shell under this name is, I think, a form of that species. It is larger than any of our typical examples and more brightly variegated, and the whorls are perhaps a trifle flatter; still I think it is only a variety."

ALLODISCUS WAIROAENSIS, n.sp.

(Pl. XXII. figs. 3-3*b*.)

Shell small, discoidal, perforated; colour pale horny with radiate streaks of rufous on the surface, tessellated on the periphery, minutely spotted on the base; not shining, thin, semi-transparent, with fine and narrow radiate ribs, which are almost straight on the surface, slightly sinuated at the side and straight again on the base, extending to the umbilicus. Ribs about 7 per millm. Spire very short, flat. Whorls $4\frac{1}{2}$, rounded, slowly and regularly increasing. Apex blunt, smooth. Suture impressed, the last

whorl not descending. Aperture slightly oblique, lunar, rather considerably excavated by the penultimate volution. Peristome straight, acute, margins very little approximating. Columellar margin short, oblique, slightly thickened and reflexed. Base convex, with a thin white callosity to a short distance outside the aperture. Umbilicus very narrow, open, deep.

Diam., greatest $3\frac{1}{4}$, least $2\frac{3}{4}$; height 2 millm.

Animal unknown.

Hab.—Wairoa Gorge, near Nelson.

This species is nearest to *A. venulatus*, Pfeiffer, but is distinguished from it by being smaller, perforated, and the ribs more distant.

ALLODISCUS URQUHARTI, n.sp.

(Pl. XXII. figs. 4-4*d*.)

Shell very minute, globosely depressed, umbilicated; colour horny without any markings, silky, thin, and fragile, transparent, with extremely fine and close set radiate ribs, which are slightly directed forwards and reach to the umbilicus; ribs about 40 per millm. Spire short, convex. Apex blunt, smooth. Whorls $3\frac{1}{2}$, narrow, slowly and regularly increasing, rounded, the last not descending. Suture deep; periphery rounded. Aperture nearly vertical, rotundly lunate, much excavated by the penultimate whorl. Peristome simple, straight, acute, columellar margin regularly arched, not reflexed; margins convergent. Base rounded. Umbilicus narrow, previous deep.

Diam., greatest $1\frac{1}{2}$, least $1\frac{1}{4}$; height 1 millm.

Hab.—North Island: Pirongia Mt. (A. T. Urquhart), Hunna Range (Capt. T. Broun).

I have much pleasure in naming this rare species after Mr. A. T. Urquhart, who first discovered it.

A. Urquharti is the minutest, widest umbilicated, and closest ribbed known species of the section *Allodiscus*.

Jaw (fig. 4*c*) arcuate, consisting of about 14 thin plaits, indenting both margins. The central plaits are broader than those on the ends, and are separated from each other by a narrow interstice.

Radula (fig. 4*d*) tongue-shaped, transverse rows straight, consisting of 18—1—18 teeth, of which 3 to 4 may be considered as laterals. Central tooth small, base longer than broad, narrow and rounded anteriorly, broader and almost straight on the posterior end. Reflection small, rounded, with one sharp median cutting point, extending very little beyond the middle of the base. Lateral teeth broader, quadrate, reflection broad, short, bicuspid, with one short cutting point on each cusp, not reaching the posterior margin of the base.

There follow a few transition teeth, going over from bicuspid to tri- and quadricuspid marginals, which are much broader than long, the cutting points rather long and sharp. The second cutting point is the longest. Last marginal with three cutting points only.

Therasia Traversi, E. A. Smith, sp.

(Pl. xxii. figs. 5-5*a*.)

This shell was classed by its author under *Thalassia*, but on examining the radula of the animal I at once saw that it really belongs to the section *Therasia*, Hutton. As first pointed out by Prof. F. W. Hutton, the shells in both sections, *Thalassohelix* and *Therasia*, show almost the same characters, and it is therefore necessary to examine the radula for ascertaining the respective section. The dentition of *T. Traversi* having never been examined before, I propose to give description and figures of it.

Jaw (fig. 5) slightly arcuate, membranaceous, the ends bent upwards. It is composed of numerous narrow nearly vertical plaits, partly overlying each other, broadly indenting the upper margin.

Radula (fig. 5*a*) tongue-shaped, the straight transverse rows consisting of 34—1—34 teeth, of which 14 are laterals. Central tooth quadrangular, somewhat longer than broad, with a triangular reflection, bearing one short median cutting point, which does not extend to the posterior end of the base. Laterals slightly broader, bicuspid, the inner cusp much broader and longer than the anterior one, each of them being provided with a

cutting point, which shows a development corresponding to the reflection, but neither of them reaches to the posterior end of the base.

A number of intermediate teeth are following, in which the base is getting broader and shorter, the two cutting points stouter and longer, extending beyond the base. Marginals short and broad, provided with two well developed inner cutting points, the outer posterior margin of the base bearing three to four small teeth or being simply indented. Last marginals rudimentary, quadrate, minute.

Flammulina crebriflammis, Pfeiffer, sp.

In "Nautilus," vii. July, 1893, No. 3, p. 35, Mr. C. Hedley published the following note:—"In the Reference List *Flammulina infundibulum*, H. and J., was placed under *F. crebriflammis*, Pfr., as a synonym. Tryon and Pfeiffer, whom we followed in this course, were certainly wrong in connecting *infundibulum* with *crebriflammis* (Mon. Hel. Viv. iii. p. 148, etc.). *H. infundibulum* was described from Vavas, Tonga I., and appears to be a small variety of *gradata*, Gould. It was omitted from Mousson's Tongan list."

Laoma pirongiaensis, n.sp.

(Pl. xxii. figs. 6-6*b*.)

Shell small, conoidal, perforated; colour horny, banded with rufous, in zigzag lines on the last whorl and extending to the umbilicus; not shining, semitransparent, with oblique slightly membranaceous plaits, about 7 per millm., crossed by exceedingly fine and narrow spiral striæ, which become more distinct at the base. Spire conoidal, rather obtuse; apex smooth. Whorls $5\frac{1}{2}$, slowly and regularly increasing, rather flattened, the last subangulated. Suture not deep and not margined. Aperture oblique, lunate; peristome thin, straight. There are four lamellæ in the aperture: at the base of the columella is an acute plait, two lamellæ are situated on the penultimate whorl, the lamella on the

inner side being considerably stouter and longer than the outer one, and a small tooth is fixed at the basal lip near the outer lip. Columellar margin ascending, slightly reflexed ; basal margin somewhat callous. Umbilicus very narrow, deep.

Diam. 2 ; height 1·9 millm.

Animal unknown.

Hab.—North Island : Pirongia Mt., Waikato district (A. T. Urquhart).

This species seems to be very rare, as two specimens only were obtained. It may be placed between *L. poecilosticta* and *L. marina*.

ENDODONTA TIMANDRA, Hutton, sp. 1883.

In the Reference List, p. 651, I placed this species under *E. varicosa*, Pfr., as a synonym, which, as the following report of Mr. Edg. A. Smith, of the British Museum, will show, was wrong. I sent two specimens of *E. timandra*, Hutton, for comparison with Pfeiffer's type of *varicosa*, and I am obliged to Mr. Edg. A. Smith for the following information :—"*E. timandra* is distinct from *varicosa*, Pfr. It is smaller, more openly umbilicated, has more riblets, and the armature of the mouth is different. There are three teeth in *timandra* and *one* (overlooked by Pfeiffer and Reeve) in *varicosa*, situated on the body-whorl. It is a very slender lamella and might easily be overlooked."

The reference for *E. timandra* is as follows :

Syn.—*varicosa*, Suter *(non* Pfeiffer, 1852).

Illustr.—Man. Conch. (2) viii., pl. xxiv., figs. 21-23.

Descript.—Hutton, N. Zeal. Jour. of Science, 1883, p. 475 ; Trans. N. Zeal. Inst. Vol. xvi. pp. 175, 192 ; Man. Conch. (2), viii. p. 84.

Hab.—North Island: Auckland (Cheeseman), Thames, Whangarei, Mt. Wellington, Hunna Range, Pirongia Mt., Hawke's Bay, Forty Mile Bush, Wellington.

Note.—This species seems to be limited to the North Island. I have not seen it from any other part of the colony.

ENDODONTA VARICOSA, Pfeiffer, sp. 1852.

(Pl. XXII. fig. 7).

The correct reference of this species is now the following:—

Syn.—*timandra*, Suter *(non* Hutton, 1883).

Illustr.—Reeve, Conch. Icon. vii. pl. CXXXIII. fig. 824; Tryon, Struct. Syst. Conch. iii. pl. XCIV. fig. 12; Man. Conch. (2), iii. pl. III. fig. 10.

Descript.—Pfeiffer, P.Z.S. 1852, p. 148; Mon. Hel. Viv. Vol. iii. p. 97; Reeve, Conch. Icon. Helix, p. 824; Hector, Cat. Land Moll. N. Zeal. 1873, p. 11; Hutton, Man. N. Zeal. Mollusca, 1880, p. 70; Trans. N. Zeal. Inst. Vol. XVI. p. 192; Man. Conch. (2) iii. p. 23.

Dentition.—Suter, Trans. N. Zeal. Inst. Vol. XXIV. p. 293, pl. XXII. figs. 28, 29 (this radula is abnormal).

Hab.—South Island: Akaroa (Suter), Dyer's Pass, Riccarton Bush, near Christchurch.

Note.—This species replaces *E. timandra* in the South Island. I have not seen it from the North Island.

As mentioned above the radula described and figured in Trans. N. Zeal. Inst. XXIV. shows quite exceptional abnormal forms of the rachidian and lateral teeth, but it is from *E. varicosa* and not *timandra*, Hutt. I fortunately received a living specimen from Bank's Peninsula, which proved to possess a normal radula, and I wish to give here a short description of it, accompanied by a figure.

Radula (fig. 7) tongue-shaped, with transverse straight rows of teeth 13—1—13, of which three may be considered as laterals, and three as transition teeth. The central and laterals are very much alike, the base quadrangular, slightly longer than broad, sinuated in front. Reflection tricuspid, the median cusp with its short cutting point reaching to the posterior end of the base; the side-cusps are short, rounded, each with a very small cutting point. In the lateral teeth the median cutting point extends

beyond the base. The intermediate teeth show a stronger development of the inner side and median cutting point, the reflection is getting broader and longer, and in the marginal teeth we find a broad, more or less quadrangular reflection with three or four cutting points, the two inner ones much longer than the others. The last but one is bidentate, the last minute, without cutting point. The other radula I described had the formula 15—1—15.

Ptychodon hunnaensis, n.sp.

(Pl. xxiii. figs. 8-8*c*.)

Shell minute, sub-discoidal, umbilicated, pale horny, with distant irregular broad streaks of rufous; not shining, thin and fragile, semi-transparent. Whorls 5, narrow, regularly increasing, slightly rounded, the last proceeding considerably below the penultimate; with radiate, fine, nearly straight ribs, about 15 per millm., slightly directed forwards. Spire short, almost flat. Apex blunt, smooth. Suture impressed; periphery rounded. Aperture rotundly-lunar, oblique, excavated by the penultimate whorl in the upper part. Peristome straight, acute, margins convergent, regularly arched, columellar margin descending obliquely, not reflexed. Aperture with 12 teeth, three on the penultimate whorl, two on the columella, and seven on the parietal wall. On the penultimate whorl is centrally situated a stout lamina, forked at the top by a broad groove, and below it are two acute laminæ at regular intervals of one-third. From the columella two large blunt teeth, on a common base, extend rather far into the aperture. The parietal wall is covered with seven somewhat irregular and rather blunt teeth. Umbilicus broad, perspective, occupying nearly one-third of the diameter. Base rounded.

Diam., 2; height 1 millm.

Hab.—North Island: Hunna Range (Capt. T. Broun), Taupiri Mt. (A. T. Urquhart), Waimarama, Hawke's Bay (A. Hamilton).

A single specimen only from each locality.

Charopa pseudocoma, n.sp.

(Pl. xxiii. figs. 9-9*e*.)

Shell discoidal, umbilicated, fuscous with a greenish hue, sometimes with distant, irregular, radiate brown streaks, which extend in zigzag lines to the umbilicus, sometimes without distinct marks; not shining, thin, semi-transparent, with oblique slightly curved close ribs, slightly directed backwards, about 5 per millm.; the interstices between the ribs occupied by fine growth-lines. Spire flat, periphery rounded, apex smooth, mostly devoid of epidermis and somewhat eroded. Whorls 5, rather flattened, especially the four first ones, slowly and regularly increasing, the last not descending anteriorly; suture not deep. Aperture diagonal, lunately-rotund; peristome simple, straight, acute, margins slightly convergent; columellar margin arched, slightly dilated above towards the umbilicus, which is broad, conical, showing all the volutions and occupying over four-tenths of the diameter; base rounded.

Diam., greatest $5\frac{1}{2}$, least 5; height $2\frac{1}{2}$ millm.

Hab.—South Island: Akaroa, Port Hills (Lyttelton), Dyer's Pass, Riccarton Bush, near Christchurch (H. S.) In these places it seems to replace *Ch. coma*, Gray.

Note.—This species, which is very near *Ch. coma*, is distinguished from it by its smaller size, the darker colour and its greenish hue, the very frequent absence of any markings, and, if present, their zigzag form on the base. The ribs are closer and finer, the spire always flat, and the umbilicus broader. It is much more constant in form than *Ch. coma*.

Animal very shy, small, yellowish-white. Eye-peduncles rather large, clavate, blackish, from each of them a black stripe runs along the neck to the mantle. Tentacles short, rather stout, rounded in front. The neck is transversely grooved. The whole length of the foot is bordered by a distinct pedal line, and to it run over the entire length of the body diagonal grooves. Mantle rather posterior; tail short, rounded, tapering, without mucous pore, not extending beyond the shell. Sole uniformly coloured, whitish and smooth.

Jaw very thin, membranaceous ; the upper margin arcuate, the cutting edge indistinct, almost straight, running over into the membrane to which jaw and radula are attached.

Radula tongue-shaped, the transverse straight rows consisting of 16—1—16 teeth, of which 4 to 5 may be considered as laterals. In another radula the formula was 15—1—15. Central tooth quadrangular, longer than broad, sinuated anteriorly, reflection tricuspid, the median long and reaching with its short cutting point to the posterior end of the base ; the side-reflections are short, rounded, each with a rudimentary cutting point. Laterals broader, almost quadrate, similar to the rachidian tooth, but the median cutting point is extending beyond the base over the next row of teeth. A few intermediate teeth show a shortening of the median reflection, its cutting point growing stouter and longer, and the cutting point on the inner side is also increasing in size.

Marginals short and very broad, first with three, then with four teeth, of which the two inner ones are long and stout, the outer ones remaining small. Last marginal minute, quadrate, with two teeth.

Charopa segregata, n.sp.

(Pl. xxiii. figs. 10-10*b*.)

Shell small, discoidal, umbilicated, not shining, colour horny with distant, irregular light-brown radiate streaks ; thin, semi-transparent ; rather distantly ribbed, the ribs almost straight, extending to the umbilicus ; about 5 per millm., interstices with numerous very fine growth-lines. Spire flat, apex smooth, somewhat shining, white. Whorls 5, slowly and regularly increasing, rounded, the last not descending in front ; suture impressed, periphery rounded. Aperture slightly oblique, rotundly-lunar, but little excavated by the penultimate volution. Peristome simple, acute, straight ; columellar margin arcuated, not reflexed, margins slightly converging. Umbilicus broad, conical, about one-third of the diameter ; base rounded.

Diam., greatest $2\frac{3}{4}$, least $2\frac{1}{2}$; height $1\frac{1}{4}$ millm.

Hab.—North Island. Collected amongst a lot of other shells from flood margin of a stream at Waimarama, Hawke's Bay, by Mr. A. Hamilton.

Animal unknown.

This shell stands nearest to *Ch. anguiculus*, Reeve.

CHAROPA BUCCINELLA, Reeve, sp., 1852.

Syn.—*gamma*, Pfeiffer, 1852 (? 1853); *sylvia*, Hutton, 1883; *tau*, Suter (*non* Pfeiffer, 1862).

Illustr.—Reeve, Conch. Icon. vii. pl. CXXXIII. fig. 821; Man. Conch. (2), iii. pl. III. fig. 11.

Descript.—Reeve, Conch. Icon. *Helix* sp. 821; Pfeiffer, P.Z.S. 1852, p. 57; Mon. Hel. Viv. Vol. iii. p. 100; Hector, Cat. Land Moll. N.Z. 1873, p. 13; Hutton, Man. N.Z. Moll. 1880, p. 8; and N.Z. Journ. of Science, 1883, p. 476; Trans. N.Z. Inst. xvi. pp. 175, 193; Man. Conch. (2), Vol. viii. p. 98.

Dentition.—Suter, Trans. N.Z. Inst. xxiv. p. 293; pl. XXI. figs. 24-25.

Hab.—North Island: Auckland, Horokiroi, Forty Mile Bush, Howick, Whangarei, Mt. Wellington, Hillyer's Creek, Auckland, Hunna Range, Pirongia Mt., Hawke's Bay. South Island: Bealey, Riccarton Bush, near Christchurch.

Note.—*Charopa sylvia*, Hutton, is not synonymous with *Ch. tau*, Pfeiffer, as suggested by me in P.L.S.N.S.W. (2), vii. p. 657. I sent specimens of *Ch. sylvia* to Mr. Edg. A. Smith, Brit. Mus., for examination, and he kindly sent me the following information: —"*Ch. sylvia*, Hutton. You question this being the same as *tau*, Pfeiffer. We have not yet the latter in the Museum, but Pfeiffer's description 'subdistantem costata-plicata' scarcely applies to your specimens. They are undoubtedly identical with Pfeiffer's *gamma*. I have compared them with the types, and they agree in every respect, excepting that yours are fresher."

CHAROPA BUCCINELLA, Reeve, var. SERPENTINULA, Suter, 1891.

Mr. Edg. A. Smith, Brit. Mus., to whom I sent specimens of my *Ch. serpentinula*, writes that he cannot separate the latter

from *Ch. buccinella*, Reeve. There is no doubt that both species are closely allied, but they are distinct. I compared fresh and good specimens of both, and the result of my investigation is as follows:—In *buccinella* the inner volutions are slightly elevated above the last, whilst in *serpentinula* the surface is perfectly flat. In the former the riblets are stronger and sharper and considerably more directed forwards; there are about 9 per millm., whilst in *serpentinula* they number about 15 per millm. The growth-lines of the interstices are distinctly *reticulated* in *buccinella*, but simple in *serpentinula*. The light-brown colour markings on the latter generally form zigzag lines on the periphery and base, but *buccinella* is mostly tessellated, horny and chestnut. In *buccinella* the last whorl is more tapering and the umbilicus slightly narrower than in *serpentinula*. In both the apex is radiately striated. In the dentition there is no great difference.

I am of opinion that *Ch. serpentinula* should be considered as a *variety* of *Ch. buccinella*.

CHAROPA ANGUICULUS, Reeve, var. MONTIVAGA, n.var.

(Pl. XXIII. figs. 11-11*b*.)

[=*buccinella*, Hutton, Suter, *non* Reeve.

Shell subdiscoidal, umbilicated, horny or light brown, with radiate irregular broad streaks of fulvous or chestnut; faintly shining, thin and semitransparent; closely arcuately longitudinally ribbed, riblets 10-11 per millm., interstices with fine growth-lines. Whorls 5, slowly and regularly increasing, rounded; suture impressed; periphery rounded; the last whorl not descending in front. Spire almost flat. Embryonic whorl smooth. Aperture diagonal, rounded. Peristome acute, straight, regularly rounded, columellar margin not deflexed, margins approximating. Umbilicus broad, perspective, occupying nearly four-tenths of the diameter. Base rounded.

Diam., greatest $3\frac{3}{4}$, least $3\frac{1}{2}$; height $1\frac{3}{4}$ millm.

A short diagnosis is also given in Trans. N.Z. Inst. Vol. xvi. p. 192 (*P. buccinella*).

Dentition.—Hutton, Trans. N.Z. Inst. Vol. xvi. p. 163, pl. ix. fig. d.

Hab.—North Island: Auckland (Gillies), Hunna Range, Thames, Ohaupo, Hawke's Bay, Pirongia Mt., Forty Mile Bush. South Island: Dunedin, Greymouth, Oxford, Hooker Valley.

Note.—Specimens of this shell, which by Prof. Hutton and myself were considered to be *Ch. buccinella*, Reeve, were sent to Mr. Edg. A. Smith, of the Brit. Mus., for comparison with Pfeiffer's types. Under date 21st Aug., '93, he very kindly informs me that he cannot identify these shells with anything in the Brit. Mus. collection, and there can be no doubt that they have never been described before.

This shell is very variable with regard to the intensity of the colouring, and adult specimens are rare.

Charopa tau, Pfeiffer, sp., 1862.

Syn.—*mutabilis*, Suter, 1891, = *sylvia*, Suter (*non* Hutton).

Illustr.—Trans. N.Z. Inst. Vol. xxiii. pl. xvi. figs. 2-2*b*.; Man. Conch. (2), viii. pl. xix. figs. 25-27.

Descript.—Mal. Blät, viii. p. 148; Pfeiffer, Mon. Hel. Viv. Vol. v. p. 159; Hector, Cat. Land Moll. N.Z. p. 12; Hutton, Man. N.Z. Moll. p. 8; Trans. N.Z. Inst. Vol. xxiii. p. 84; Man. Conch. (2), Vol. viii. pp. 98, 101.

Dentition.—Trans. N.Z. Inst. Vol. xxiii. p. 85, pl. xvi. figs. b. c.

Hab.—South Island: Hooker Valley, Castle Rock, Southland, Mt. Somers.

Note.—As *Ch. sylvia*, Hutton, is not identical with *Ch. tau*, Pfeiffer, but with *buccinella*, Reeve, I came to the conclusion that my *Ch. mutabilis* must be the same as Pfeiffer's *Ch. tau*. I compared my specimens with the description given by Pfeiffer, and they agree in every respect. The only difference is in the height of the shell. Pfeiffer gives it to one millimetre, whilst all my specimens show $1\frac{1}{2}$, or but very little less.

ARIOPHANTA NOVARÆ, Pfeiffer, sp., 1862.

This species was classed under *Flammulina* in the "Reference List" (p. 644). On carefully examining jaw and radula I saw, however, that it is in fact an *Ariophanta* (*Nanina*, Gray, *non* Risso). The dentition will be described and figured in Vol. xxvi. o the Trans. N.Z. Inst.

FRESHWATER SHELLS ERRONEOUSLY ASCRIBED TO NEW ZEALAND.

(1) *Melanopsis wagneri*, Roth, is mentioned as having been found in Lake Rotoiti, which of course is quite wrong, as this species, according to Mr. Hedley's kind information, is a synonym of *M. praerosa*, Linné, ranging from Syria, the Greek Islands, and Algeria to Morocco.

(2) *Ancylus dohrnianus*, Clessin, resembles somewhat *A. irvinae*, Petterd, from Tasmania, but the apex is quite different. Neither Prof. Hutton nor the writer has any knowledge of an Ancylus ever having been found in this colony (*Ancylus woodsi*, Johnston, being a *Gundlachia*), and Clessin's species may therefore help to swell the already long list of shells erroneously ascribed to New Zealand.

INTRODUCED LAND SHELLS OF NEW ZEALAND.

(1) *Vallonia pulchella*, Mueller, was found by Mr. Cheeseman in Albert Park, Auckland.

(2) *Cochlostyla fulgetrum*, Broderip (= *Bulimus antipodarum*, Gray, 1843). *B. antipodarum* is said to have been found at Kaitaia by Dieffenbach, and recent collectors (Gillies, T. W. Kirk) are reported as having found this shell at different places in the northern part of the province of Auckland. Opinions are divided as to the validity of the species; some consider it as the young of *Placostylus bovinus*, others take it as a good species. I therefore thought it well worth to investigate the question. Looking at the figure of *Bul. antipodarum* given by Edg. A. Smith (Voy. Erebus and Terror, II. Moll. pl. 1. fig. 5), and reading Gray's description one must come to the conclusion that this shell cannot belong to the genus *Placostylus*, the aperture being quite

different, but it agrees in every respect with *Cochlostyla*. This opinion was evidently shared also by the author of the species, for he says that it is allied to *Bulimus fulgetrum*, Broderip, from the Philippine Islands, which is a true *Cochlostyla*. Reading Gillies' remarks on *B. antipodarum* (Trans. N. Zeal. Inst. Vol. i. p. 60), it gives one the impression that he mistook young specimens of *P. bovinus* for Gray's species, and in this he was followed by others. Prof. Hutton kindly allowed me to examine specimens in the Canterbury Museum, labelled *B. antipodarum*, Gray, and they proved to be young specimens of *P. bovinus*, but were in no way related to *B. antipodarum*.

I am now of opinion that the shell found by Dieffenbach and described by Gray as *Bulimus antipodarum* has very likely never been found again in New Zealand, and is in reality *Cochlostyla fulgetrum*, Broderip, introduced accidentally from the Philippine Islands. This suggestion is supported by the fact that *Cochlostyla daphnis*, Broderip, another species from the Philippine Islands has been found at Picton (Trans. N. Zeal. Inst. Vol. xxiv. p. 280).

EXPLANATION OF PLATES.

Plate xxii.

Figs. 1-1*b*.—*Lagochilus Hedleyi*, Sut., shell (× 6).
Fig. 1*c*. —*Lagochilus Hedleyi*, Sut., operculum.
Fig. 1*d*. —*Lagochilus Hedleyi*, Sut., part of last whorl, greatly magnified.
Figs. 2-2*a*.—*Lagochilus torquillum*, Sut., shell (× 6).
Fig. 2*b*. —*Lagochilus torquillum*, Sut., part of last whorl, greatly magnified.
Figs. 3-3*b*.—*Allodiscus wairoaensis*, Sut., shell (× 3).
Figs. 4-4*b*.—*Allodiscus Urquharti*, Sut., shell (× 6).
Fig. 4*c*. —*Allodiscus Urquharti*, Sut., jaw, magnified.
Fig. 4*d*. —*Allodiscus Urquharti*, Sut., teeth of radula, magnified.
Fig. 5. —*Therasia Traversi*, E. A. Smith, jaw, magnified.
Fig. 5*a*. —*Therasia Traversi*, E. A. Smith, teeth of radula, magnified.
Figs. 6-6*b*.—*Laoma pirongiaensis*, Sut., shell (× 10).
Fig. 7. —*Endodonta varicosa*, Pf., teeth of radula, magnified.

PLATE XXIII.

Figs. 8-8*b*. —*Ptychodon hunnaensis*, Sut., shell (× 10).
Fig. 8*c*. —*Ptychodon hunnaensis*, Sut., aperture of shell, greatly magnified.
Figs. 9-9*b*. —*Charopa pseudocoma*, Sut., shell (× 4).
Fig. 9*c*. —*Charopa pseudocoma*, Sut., animal (× 2).
Fig. 9*d*. —*Charopa pseudocoma*, Sut., jaw, magnified.
Fig. 9*e*. —*Charopa pseudocoma*, Sut., teeth of radula, magnified.
Figs. 10-10*b*.—*Charopa segregata*, Sut., shell (× 6).
Figs. 11-11*b*.—*Charopa anguiculus*, Reeve, var. *montivaga*, Suter, shell (× 5).

NOTES TO THE ABOVE, BY C. HEDLEY.

In detailing the catalogues relating to the Land and Freshwater Shells of New Zealand, there was omitted on p. 614 mention of Hutton's "List of the Freshwater Shells of New Zealand" P.L.S.N.S.W. (1) vii. pp. 67-68. Another list, then unknown to me, by Ancey, enumerating and classifying the Helicoids of New Caledonia, Bull. Soc. Mal. France, v. p. 357, should have been named on p. 616.

Mr. Pilsbry informs me that *Realia* appeared in the Synop. Contents B. M. 1840, p. 153, without any sort of description. The name should, therefore, date from 1850.

With reference to sp. 23, I note that Gould himself says, Otia Conchologica, p. 224, of his own species, *lateralis*, that it "is *L. neritoides*, Gray, probably."

E. R. S [ykes] writes (Conchologist, Sept., 1893, Vol. ii. p. 180): "The Zoological Society informs me that the part in which Pfeiffer's original description appeared was issued in March or April, 1854, though bearing the date 1852. There is, therefore, no question as to priority, and Pfeiffer's names must be given up for Reeve's." Therefore, as I conjectured, the names Pfeiffer attached to species 54, 59, 62, 65, 66, 72, 90, 94, 96, 99, 108, 111, 117, 131, 145, 147, 158, 164, 166, 167, 168 and 169 first appeared in the Monographia Heliceorum Viventium, Vol. iii., and should be dated 1853, the date of that Volume.

Ancey claims (Bull. Soc. Malac. France, v. Mars, 1889, p. 370) the genus *Psyra* (=*Allodiscus*, p. 638) as synonymous with his *Monomphalus* (described in Le Naturaliste, 1882, p. 86). He also (op. cit. p. 371) includes in *Rhytidopsis* (Le Naturaliste, 1882, p. 85) *pilula* and *granum*, the species constituting Suter's genus *Phenacohelix*. Ancey's *Ptychodon* dates from 1888 (Bull. Soc. Malac. France, v. p. 373), not from 1891 as misquoted on our p. 652.

C. P. Gloyne asserts (Quart. Journ. Conch. I. Feb., 1878, p. 319) that "Smith's name *kermadeensis* has priority over Prof. Mousson's *ultima*."

For an account of the anatomy of *P. hochstetteri*, see "On the genus *Paryphanta*," by Lieut.-Col. Godwin-Austen. Proc. Malac. Soc. I. pp. 5-9, pl. 1.